UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,176	01/02/2004	George J. Geier	CS23398RL	3352

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MOTOROLA INC	FLORES, LEON	
600 NORTH US HIGHWAY 45		
ROOM AS437	ART UNIT	PAPER NUMBER
LIBERTYVILLE, IL 60048-5343	2635	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	Applicant(s)
Office Action Summary	10/751,176	GEIER ET AL.
	Examiner	Art Unit	
	Leon Flores	2635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date *1/2/2004*.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR
　　　DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A
　　　COMPACT DISC.
(f) BACKGROUND OF THE INVENTION.
　　　(1) Field of the Invention.
　　　(2) Description of Related Art including information disclosed under 37
　　　CFR 1.97 and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(i) DETAILED DESCRIPTION OF THE INVENTION.
(j) CLAIM OR CLAIMS (commencing on a separate sheet).
(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A
　　　"Sequence Listing" is required on paper if the application discloses a
　　　nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if
　　　the required "Sequence Listing" is not submitted as an electronic
　　　document on compact disc).

The disclosure is objected to because of the following informalities: In paragraph

17, line 5 the applicant discloses that "is in a coverage area of a base station 106".

However, Figure 1 does not disclose that the base station is 106, instead is 104.

Appropriate correction is required.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees.   A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 & 37 of copending Application No. US 2003/0081660. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reason.

Re claim 1, A method in a wireless communication device for correcting a frequency error of a signal, the method comprising: receiving a signal; correlating the received signal with a plurality of offset prestored data sets (In King et al., claim 1 recites, "partially correlating the first signal segment with a corresponding first replica signal segment...."; generating at a predetermined data rate interval a plurality of signal correlations, each of the plurality of correlations correlated to each of the plurality of

offset prestored data sets (In King et al., the replica signal must be generated); and computing a frequency error estimate based upon the plurality of signal correlations. (In King et al., claim 37 recites "determining which of the accumulated magnitudes is greatest". One of ordinary skill in the art would know that the error can be estimated based on the magnitudes of the correlation result.)

This is a <u>provisional</u> obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 & 36 of U.S. Patent No. 6,775,319 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reason.

Re claim 1, A method in a wireless communication device for correcting a frequency error of a signal, the method comprising: receiving a signal; correlating the received signal with a plurality of offset prestored data sets (In King et al., claim 1 recites, "partially correlating the first signal segment with a corresponding first replica signal segment...."; generating at a predetermined data rate interval a plurality of signal correlations, each of the plurality of correlations correlated to each of the plurality of offset prestored data sets (In King et al., the replica signal must be generated); and computing a frequency error estimate based upon the plurality of signal correlations. (In King et al., claim 36 recites "determining which of the accumulated magnitudes is

greatest". One of ordinary skill in the art would know that the error can be estimated

based on the magnitudes of the correlation result.)

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims (1-2, 4-6, 14-15 & 17) are rejected under 35 U.S.C. 102(b) as being

anticipated by Tiemann et al (US Patent 6,009,118).

Re claim 1, Tiemann et al a method in a wireless communication device for

correcting a frequency error of a signal (see Fig. 4), the method comprising: receiving a

signal (see Fig. 4: element 211); correlating the received signal with a plurality of offset

prestored data sets (see Fig. 4: element 231 correlates the output of element 21 with

the output of element 24); generating at a predetermined data rate interval a plurality of

signal correlations, each of the plurality of correlations correlated to each of the plurality

of offset prestored data sets (see col. 9, lines 20-59 & col. 11, lines 55-67 & col. 12,

lines 1-31); and computing a frequency error estimate based upon the plurality of signal

correlations.(see col. 9, lines 56-59 & col. 12, lines 29-31.)

Re claim 2, Tiemann et al further teach that wherein correlating the received signal with a plurality of offset pre-stored data sets further comprises: generating a plurality of frequency offsets for a pre-stored data (see Fig. 4: element 24); and generating the plurality of offset pre-stored data sets based upon the plurality of frequency offsets. (see Fig. 4: element 24)

Re claim 4, Tiemann et al further teach wherein correlating the received signal with the plurality of offset pre-stored data sets coherently includes synchronizing the received signal with the pre-stored data at the predetermined data rate interval. (see col. 10, lines 45-46 & col. 18, lines 37-40. One skill in the art would know that offsetting the pre-stored data in the receiver will synchronize or align it to the received signal.)

Re claim 5, Tiemann et al further teach that wherein the plurality of signal correlations are a plurality of in-phase and quadrature correlations. (see col. 9, lines 60-67 & col. 10, lines 1-11.)

Re claim 6, Tiemann et al further teach that, wherein: the wireless communication device is a global positioning system receiver (see col. 9, line 8), and the plurality signal correlations are a plurality of in-phase and quadrature correlations. (This limitation has been analyzed and rejected w/r to claim 5.)

Claim 14 is system claim corresponding to the method claim 1 above. Hence,

Hence, the steps in method claim 14 would have necessitated the system elements as

claimed. Therefore, claim 16 has been analyzed and rejected in view of claim 1 above.

Claim 15 is system claim corresponding to the method claim 2 above. Hence,

Hence, the steps in method claim 15 would have necessitated the system elements as

claimed. Therefore, claim 15 has been analyzed and rejected in view of claim 2 above.

Claim 17 is system claim corresponding to the method claim 4 above. Hence,

Hence, the steps in method claim 17 would have necessitated the system elements as

claimed. Therefore, claim 17 has been analyzed and rejected in view of claim 4 above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.

2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims (3, 11-13, 16, & 20-22) are rejected under 35 U.S.C. 103(a) as being

unpatentable over Tiemann et al. (US Patent 6,009,118), as applied to claim 1, and in

view of applicant's prior art.

Re claim 3, Tiemann et al further teach that wherein computing a frequency error

estimate based upon the plurality of signal correlations further comprises: computing

signal magnitude information for each of the plurality of signal correlations (see Fig. 4:

element 29); sampling the signal magnitude information from each of the plurality of

signal correlations at a predetermined time (see col. 12, lines 7-13. It is inherent the

value at the output of element 29 is sampled to a specific time slot in the non-coherent

accumulator.); curve-fitting the computed frequency error modulation representation to

the sampled signal magnitude information; and computing the frequency error estimate

based upon the curve-fitting. (One skill in the art would know that curve-fitiing is just

another term for peak detection. See col. 12, lines 19-20.). But the reference of

Tiemann et al fails to specifically disclose computing a frequency error modulation

representation of the received signal. However, the applicant's submitted prior art does.

(see paragraph 6 & 20)

The applicant's submitted as prior art that, it is well known in the art that the

frequency error modulation representation of the received signal can be expressed as

"sin(x)/x" where x is related to a product of an integration time of the received signal and the frequency error between the received signal and the frequency error between the received signal and the frequency used to generate the signal correlations.

Taking the combined teachings of Tiemann et al and applicant's prior art <u>as a whole</u>, it would have been obvious to one of ordinary skill in the art to have incorporated these steps into the system of Tiemann et al in the manner as claimed and as taught by applicant's prior art, for the benefit of estimating frequency offsets.

Re claim 11, the combination of Tiemann et al and applicant's prior art further teach that, further comprising: re-sampling the signal magnitude information from each of the plurality of signal correlations at a second predetermined time; curve-fitting the computed frequency error modulation representation to the re-sampled signal magnitude information; and re-computing a frequency error estimate based upon the curve-fitting of the computed frequency error modulation representation to the sampled signal magnitude information and to the re-sampled signal magnitude information. (Hence, if frequency error computed does not fall within a predetermined threshold, the system will enter a mode or iteration, which will strive to search for a correlation that best estimates the error. Therefore, this claim has been analyzed and rejected in view of claim 3.)

Re claim 12, the combination of Tiemann et al and applicant's prior art further teach that, further comprising: segmenting time-wise each of the plurality of signal

correlations into a predetermined number of signal correlation time-segments (see col. 11, lines 55-67 & col. 12, lines 1-31.); re-sampling the signal magnitude information from each signal correlation time-segment of the plurality of signal correlations (see claim 11); generating an average signal magnitude for each frequency offset based upon the re-sampled signal magnitude information for the frequency offset (see col. 18, lines 24-47.); and curve-fitting the computed frequency error modulation representation to the averaged signal magnitude information.(see col. 18, lines 48-67. After the averaging of the correlation (non-coherent accumulator) the result are sent to the control unit where the peak time is estimated by using an algorithm or interpolation.)

Re claim 13, the combination of Tiemann et al and applicant's prior art further teach that, further comprising: aligning each signal correlation time-segment with a corresponding time segment of the pre-stored data. (One skill in the art would know that if pre-stored data is offset, then the pre-stored data is aligned or synchronized with the incoming signal.)

Claim 16 is system claim corresponding to the method claim 3 above. Hence, Hence, the steps in method claim 16 would have necessitated the system elements as claimed. Therefore, claim 16 has been analyzed and rejected in view of claim 3 above.

Claim 20 is system claim corresponding to the method claim 11 above. Hence, Hence, the steps in method claim 20 would have necessitated the system elements as

claimed. Therefore, claim 20 has been analyzed and rejected in view of claim 11 above.

Claim 21 is system claim corresponding to the method claim 12 above. Hence, Hence, the steps in method claim 21 would have necessitated the system elements as claimed. Therefore, claim 21 has been analyzed and rejected in view of claim 12 above.

Claim 22 is system claim corresponding to the method claim 13 above. Hence, Hence, the steps in method claim 22 would have necessitated the system elements as claimed. Therefore, claim 22 has been analyzed and rejected in view of claim 13 above.

Claims (7-10 & 18-19) are rejected under 35 U.S.C. 103(a) as being unpatentable over Tiemann et al. (US Patent 6,009,118), as applied to claim 1, in view of applicant's prior art, and in further view of Eschenbach (US Patent 6,546,040 B1).

Re claim 7, the combination of Tiemann et al and applicant's prior art fails to teach that, further comprising:determining whether the frequency error estimate satisfies a predetermined condition; if the frequency error estimate satisfies the predetermined condition: further correlating the received signal with a second plurality of offset pre-

stored data sets; further generating at the predetermined data rate interval a second

plurality of signal correlations for the second plurality of offset pre-stored data sets; and

computing a second frequency error estimate based upon the second plurality of offset

pre-stored data sets. However, Eschenbach does. (see Fig. 5A & see col. 8, lines 39-

65 & col. 10, lines 23-34 & col. 11, lines 14-67 & col. 12, lines 10-29.)

Eschenbach discloses a GPS receiver which correlates the representative code

epochs to a replica code epoch, time or phase offset, for providing frequency

corrections and computing a GPS pseudorange when the frequency error is less than a

threshold.

Taking the combined teachings of Tiemann et al., applicant's prior art, and

Eschenbach as a whole, it would have been obvious to one of ordinary skill in the art to

have incorporated these steps into the modified system of Tiemann et al in the manner

as claimed and as taught by Eschenbach, for the benefit of providing frequency

corrections and GPS pseudoranges.

Re claim 8, the combination of Tiemann et al., applicant's prior art, and

Eschenbach further discloses that, wherein further correlating the received signal with a

second plurality of offset pre-stored data sets further comprises: further generating a

second plurality of frequency offsets based upon the frequency error estimate for the

pre-stored data (In Tiemann et al., see col. 12, lines 15-31. Furthermore, in

Eschenbach see Fig. 5A & see col. 8, lines 39-65 & col. 10, lines 23-34 & col. 11, lines

14-67 & col. 12, lines 10-29); and further generating a second plurality of offset pre-

stored data. (In Tiemann et al., see col. 12, lines 15-31. Furthermore, in Eschenbach

see Fig. 5A & see col. 8, lines 39-65 & col. 10, lines 23-34 & col. 11, lines 14-67 & col.

12, lines 10-29)

Re claim 9, the combination of Tiemann et al., applicant's prior art, and

Eschenbach further discloses that, wherein computing a second frequency error

estimate based upon the second plurality of offset pre-stored data sets further

comprises: further computing second signal magnitude information for each of the

second plurality of signal correlations; further sampling the second signal magnitude

information from each of the second plurality of signal correlations at the predetermined

time; further computing a second frequency error modulation representation of the

received signal; curve-fitting the computed second frequency error modulation

representation to the sampled second signal magnitude information; and computing a

second frequency error estimate based upon the curve-fitting. (Hence, if frequency error

computed does not fall within a predetermined threshold, the system will enter a mode

or an iteration, which will strive to search for a correlation that best estimates the error.

Therefore, this claim has been analyzed and rejected in view of claim 3.)

Re claim 10, the combination of Tiemann et al., applicant's prior art, and

Eschenbach further discloses that, wherein determining whether the frequency error

estimate satisfies the predetermined condition by: comparing the frequency error

estimate with a predetermined allowed frequency error (In Eschenbach, see Fig. 5A);

and determining the frequency error estimate satisfies the predetermined condition if the

frequency error estimate is less than the predetermined allowed frequency error. (In

Eschenbach, see Fig. 5A)

Claim 18 is system claim corresponding to the method claim 10 above. Hence,

Hence, the steps in method claim 18 would have necessitated the system elements as

claimed. Therefore, claim 18 has been analyzed and rejected in view of claim 10

above.

Claim 19 is system claim corresponding to the method claim 10 above. Hence,

Hence, the steps in method claim 19 would have necessitated the system elements as

claimed. Therefore, claim 19 has been analyzed and rejected in view of claim 10

above.

The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. Yamamoto et al. (US Patent 6,646,980 B1), Dempster et al. (US

Patent 5,459,473), and Dafesh (US Publication 2003/0227963 A1)

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Flores whose telephone number is 571-270-1201. The examiner can normally be reached on Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on 571-270-1195. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LF
December 7, 2006

VU LE
SUPERVISORY PATENT EXAMINER